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## (54) IMPROVEMENTS IN OR RELATING TO STENCILS

(71) I, ROGER PHILIP NORRIS, a British Subject, formerly of 46A, Leicester Road, Wigston Magna in the County of Leicester, and now of 30, Saville Road, Blaby, Leicester, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is concerned with improvements in or relating to stencils.

Stencils find applications in many fields, for instance in decorating and labelling. They generally comprise a single sheet of material which has a hole in the shape of a device cut out from it. This type of stencil can be held in position in contact with a surface which it is desired to decorate or label while paint or some other liquid marking substance is applied to it so as to penetrate the cut out portion of the stencil and leave an impression of the cut out portion on the surface. Another way of using this type of stencil is to stick it temporarily to a surface which it is desired to decorate or label, and remove it after applying the paint or other liquid marking substance.

This type of stencil suffers from the disadvantage that for certain devices, such as A, O, 6 etc., the hole in the stencil will divide it into a central part surrounded by an outer part, and usually thin "stays" are left, connecting the central part to the outer part, to keep the central part in correct position relative to the outer part. The use of stays, however, mars the completed work since they cover over part of the surface and prevent, for example, the complete oval of an O from being stencilled onto a surface.

It is one of the objects of the present invention to provide an improved stencil assembly.

It is another of the objects of the present invention to provide an improved method of decorating or labelling a surface.

The present invention provides a stencil assembly comprising (a) a stencil sheet, (b) a support sheet, and (c) a release sheet, the stencil sheet having a hole in the shape of a device in it and being stuck by a first adhesive layer, on one side of the stencil sheet, to the

support sheet, and the release sheet being stuck, by a second adhesive layer, to the stencil sheet on the side opposite to the support sheet, the second adhesive layer being such that the release sheet can readily be peeled from the stencil sheet leaving the second adhesive layer on the stencil sheet so that the latter can be adhered thereby to a surface and the first adhesive layer being such that the support sheet can readily be peeled thereafter from the stencil sheet with the first adhesive layer adhering to the support sheet.

In a stencil assembly as set out in the last preceding paragraph we prefer that the support sheet is translucent or transparent. Conveniently, the stencil sheet is thicker than the support sheet to facilitate separation of the sheets and the surface adjacent the support sheet may be roughened to reduce adhesion between the sheets to facilitate separation.

It is found that, by using stencil assemblies according to the present invention, devices that are too complex for conventional stencils to deal with without the use of a second or more complementary stencils, for instance copies of brass rubbings, may be stencilled onto a variety of surfaces using a single stencil assembly. By the use of several complementary stencil assemblies according to the present invention, a complicated device of several colours may be successfully stencilled, for instance national emblems. If desired stencil assemblies in accordance with the invention may be prepared for stencilling onto the inside of windows for the device to be viewed from the other side of the window; these would find application in shops.

The invention further provides a method of stencilling a device onto a surface using a stencil assembly comprising a stencil sheet which has a hole in the shape of a device in it, a support sheet adhered by a first adhesive layer to the stencil sheet on the side from which the device is intended to be viewed and a release sheet adhered by a second adhesive layer to the other side of the stencil sheet, the method comprising peeling the release sheet from the stencil sheet leaving the second adhesive layer adhered to the stencil sheet,

sticking the stencil sheet using the second adhesive layer to the surface, peeling the support sheet from the stencil sheet leaving the stencil sheet adhered to the surface, 5 applying paint or other marking liquid to the stencil sheet so as to penetrate the hole in the shape of the device in the stencil sheet and peeling the stencil sheet from the surface leaving the paint or other marking 10 liquid marking the surface in the shape of the device.

After carrying out a method as set out in the last preceding paragraph it is possible when certain materials have been used to 15 make the stencil assembly, to reassemble the stencil assembly for further use. Where it is desired to print a device of two or more colours onto a surface several complementary stencil assemblies can be used in carrying out 20 a method as described in the last preceding paragraph, one being employed for each constituent colour.

In carrying out a method as set out in the last preceding paragraph but one, the adhesive 25 layers of the stencil assembly are chosen such that the bond between the stencil sheet and surface is greater than that between the stencil sheet and the support layer; preferably the bond between the stencil sheet and surface 30 is at least 50% stronger than the bond between the stencil sheet and the support sheet.

There now follows a detailed description of an illustrative stencil assembly to be read with reference to Figure 1 of the drawings 35 accompanying the provisional specification. It is to be understood that the illustrative stencil assembly has been selected for description by way of example and not of limitation of the invention.

40 In the drawings accompanying the provisional specification:-

Figure 1 is a perspective view of the illustrative stencil assembly showing its construction.

45 The illustrative stencil assembly comprises a stencil sheet 2 of polyvinylchloride material which in this case is opaque. This stencil sheet 2 has the shape 4 of a letter 'A' cut out from it. The stencil sheet 2 has an adhesive 50 layer on its surface 6 from which side the stencil is not intended to be viewed. This adhesive layer secures the stencil sheet 2 to a release sheet 8 formed of paper coated with a silicone based release agent. A transparent 55 support sheet 10 having an adhesive layer on one of its surfaces is secured by this adhesive layer to the other surface of the stencil sheet 2. Thus the stencil sheet 2 is sandwiched between the sheet 8 and the sheet 10 and 60 adhered to the sheet 10 by a first adhesive layer and to the sheet 8 by a second adhesive layer.

The adhesive used for the layers on both the stencil sheet 2 and the support sheet 10 is a 65 pressure-sensitive adhesive having such pro-

perties that the adhesive holds the sheets firmly together but allows the sheets to be readily peeled apart when necessary. The second adhesive layer has greater strength 70 than the first adhesive layer for the reason which will appear below. The first adhesive layer is transparent so that the shape 4 can be clearly seen through it and the sheet 10.

The second adhesive layer is of a kind 75 which will not peel paint from a surface such as a wall if the stencil is stuck to a painted surface. Suitable adhesives for these layers are latex based adhesives but it is best to avoid adhesives which are soluble in any 80 constituent of the paint or ink with which the illustrative stencil assembly is to be used.

One adhesive which has been found to be suitable for both the adhesive layers is 85 supplied by Bostik Limited, Ulverscroft Road, Leicester under the number 11 GA 165. This adhesive is supplied in liquid form in an aqueous carrier and may be applied to the sheets by any suitable means for example 90 roller, brush or spray: after the liquid adhesive in the aqueous carrier has been applied to the sheets the water is removed and a permanently tacky pressure sensitive adhesive layer remains on the sheet to which the adhesive has been 95 applied. The relative strength of the adhesive layers may be varied by diluting the liquid adhesive with water thereby varying the concentration of the applied adhesive to the level necessary to achieve desired bond strengths.

In modifications of the illustrative stencil 100 assembly the stencil sheet 2 may be made of aluminium foil, or paper, so long as the paper is resistant to penetration by the paint (for some paints the paper will require a coating of a substance resistant to such 105 penetration), and the release sheet may be replaced by a card or foil.

In one method of using the illustrative stencil assembly the release sheet 8 is first peeled 110 from the stencil sheet 2. The stencil sheet is then stuck to a surface by the second adhesive layer, which has remained on the stencil sheet. The support sheet 10 is then peeled away from the sheet 2 carrying with it the first adhesive layer and leaving the sheet 2 behind on the 115 surface; so that this can readily be done the second adhesive layer is arranged to bond the stencil sheet 2 to the surface at least 50% more strongly than the first adhesive layer bonds the stencil sheet 2 to the support sheet 10. 120 Paint is next applied to the cut out-shape 4 region of the sheet 2 so as to form the shape of the letter 'A' on the surface. Before the paint dries the stencil sheet 2 is removed from the surface; this prevents the formation of 125 unsightly ridges by the paint along the edges of the cut-out shape 4. If it is desired to re-use the stencil assembly the sheet 10 is re-adhered to the sheet 2 before the sheet 2 is removed from the surface; the sheet 2 may then be 130

peeled from the surface with the sheet 10 stuck to it and, with care, isolated parts of the sheet 2 may be peeled off, carried on the sheet 10 so as to retain the relative positions of the various parts of the stencil sheet.

The sheet 8 and the sheet 10 may be provided with tabs extending beyond the stencil sheet 2 to aid in peeling off the sheet 8 or the sheet 10. The sheet 10 may also be printed with means, e.g. a grid or other symbols, to aid in locating the stencil sheet on a surface.

A method of manufacturing the illustrative stencil assembly comprises laying sheet material from which the stencil sheet 2 is to be made, the material having an adhesive layer already applied, with its adhesive layer uppermost on the baseboard of a cutting press and cutting out the shape of a device from the sheet using a cutting knife and pressure supplied by the press. While this is done the so-formed stencil sheet 2 is held in position by suitable means so that isolated portions of the sheet are not displaced relative to the remainder of the sheet 2. If the device concerned does not include isolated portions this holding down is unnecessary.

Suitable means for holding the stencil sheet 3 on the baseboard include weak thin coatings of adhesive, for example Kodafat (Registered Trade Mark), or the use of a vacuum pump sucking air through small holes in the baseboard. The release sheet 8 is then placed on the stencil sheet 2 and bonded thereto by the adhesive layer. The sheet 8 and sheet 2 are removed from the baseboard, the sheet 8 acting to keep isolated portions of the sheet 2 in position. The transparent support sheet 10 having an adhesive layer thereon, is next stuck by this adhesive layer to the opposite surface of the stencil sheet 2 to that on which the release sheet 8 is stuck.

#### WHAT I CLAIM IS:—

1. A stencil assembly comprising (a) a stencil sheet, (b) a support sheet, and (c) a release sheet, the stencil sheet having a hole in the shape of a device in it and being stuck by a first adhesive layer, on one side of the stencil sheet, to the support sheet, and the release sheet being stuck, by a second adhesive layer, to the stencil sheet on the side opposite to the support sheet, the second adhesive layer being such that the release sheet can readily be peeled from the stencil sheet leaving the second adhesive layer on the stencil sheet so that the latter can be adhered thereby to a surface and the first adhesive layer being such that the support sheet can readily be peeled thereafter from the stencil sheet with the first adhesive layer adhering to the support sheet.

2. An assembly according to claim 1

wherein the adhesive of the first adhesive layer is a permanently tacky pressure sensitive adhesive.

3. An assembly according to claim 1 wherein the adhesive of the second adhesive layer is a permanently tacky pressure sensitive adhesive.

4. An assembly according to claims 2 and 3 wherein the adhesive of the two adhesive layers is of the same chemical composition.

5. An assembly according to any one of the preceding claims wherein the support sheet is translucent or transparent.

6. An assembly according to any one of the preceding claims wherein the surface of the stencil sheet adjacent the support sheet is roughened to facilitate separation of the stencil sheet and support sheet.

7. An assembly according to any one of the preceding claims comprising means to aid in locating the stencil sheet on a surface.

8. An assembly according to any one of the preceding claims wherein the support sheet and release sheet comprise tabs extending beyond the stencil sheet to facilitate peeling the sheets apart.

9. An assembly according to any one of the preceding claims wherein the stencil sheet is polyvinyl chloride.

10. An assembly according to any one of the preceding claims wherein the release sheet is silicone coated release paper.

11. A stencil assembly substantially as hereinbefore described with reference to Figure 1 of the drawings accompanying the provisional specification.

12. A method of stencilling a device onto a surface using a stencil assembly comprising a stencil sheet which has a hole in the shape of a device in it, a support sheet adhered by a first adhesive layer to the stencil sheet on the side from which the device is intended to be viewed and a release sheet adhered by a second adhesive layer to the other side of the stencil sheet, the method comprising peeling the release sheet from the stencil sheet leaving the second adhesive layer adhered to the stencil sheet, sticking the stencil sheet using the second adhesive layer to the surface, peeling the support sheet from the stencil sheet leaving the stencil sheet adhered to the surface, applying paint or other marking liquid to the stencil sheet so as to penetrate the hole in the shape of the device in the stencil sheet and peeling the stencil sheet from the surface leaving the paint or other marking liquid marking the surface in the shape of the device.

13. A method according to claim 12 wherein the bond between the surface and the stencil sheet is at least 50% stronger than the bond between the stencil sheet and the support sheet.

14. A method according to claim 12 wherein the hole in the stencil sheet divides the

- sheet into a central part surrounded by an outer part and these parts are held in desired relative positions by adhesion to the support sheet until after they have been stuck to the surface by the second adhesive layer.
- 5 15. A method according to claim 12 using a stencil assembly according to any one of claims 4 to 11.

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Fig 1

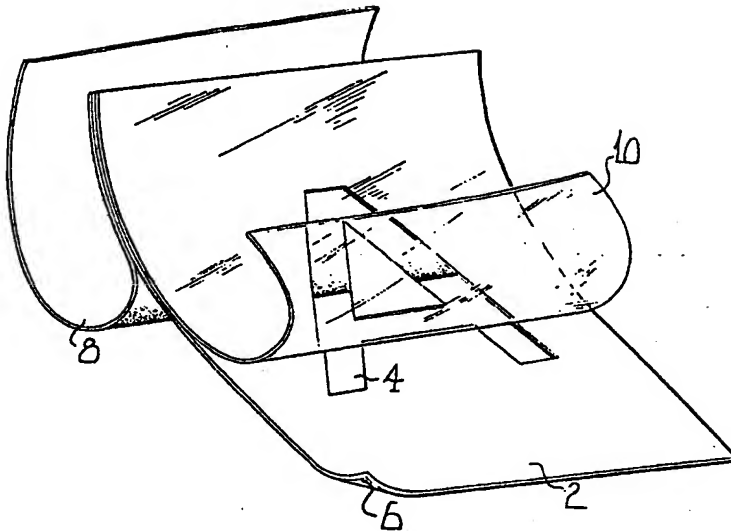


Fig 2

